

ARTICLE 3. MONITORING REQUIREMENTS

RULE 4. GENERAL PROVISIONS

326 IAC 3-4-1 ----- General provisions: definitions

In addition to the definitions provided in IC 13-11, 326 IAC 1-2, and 326 IAC 2-7, the following definitions apply throughout this article unless expressly stated otherwise:

- (1) “Applicable emission limitation or standard” means any of the following:
 - (A) A state or federal emission limitation or standard applicable to a regulated hazardous air pollutant under 40 CFR 61* or 40 CFR 63*.
 - (B) A state or federal emission limitation or standard applicable to a regulated air pollutant, other than a hazardous air pollutant under Section 112 of the CAA, for which the source is classified as a major source.
- (2) “Calendar quarter” means a three (3) month period beginning January 1, April 1, July 1, or October 1.
- (3) “Certified emissions monitor” means an emissions monitor that meets all applicable performance specifications of 40 CFR 60* or any other performance specification, and for which performance data has been submitted to and approved by the department.
- (4) “Emission test”, “source sampling test”, “compliance test”, or “performance test” means a procedure for sampling a gas stream from a single sampling location at a facility, unit, or pollution control equipment, to determine a pollutant emission rate, concentration, or parameter while the facility, unit, or pollution control equipment is operating at conditions that result in measurement of the highest emission or parameter values (prior to any control device), or at other operating conditions approved by the department or U.S. EPA. A test shall comprise three (3) sampling runs for a specified sampling time span. Additional conditions may be required by applicable rules, permit, or enforcement order. The test shall be performed using sampling and analytical procedures approved by the department or U.S. EPA for the specific pollutant or parameter and facility, unit, pollution control equipment, process, or operation.
- (5) “Emissions unit” means any part of or activity at a source that emits or has the potential to emit any regulated air pollutant for which an emission limitation or standard has been established. This term does not alter or affect the definition of the term “unit” for purposes of Title IV of the CAA or of the term “emissions unit” for purposes of Title V of the CAA.
- (6) “Major source” means any major source as defined in 326 IAC 2-7-1(22), excluding any source described in 326 IAC 2-7-1(22)(A).
- (7) “Monitoring” means any form of collecting data on a routine basis to determine or otherwise assess compliance with emission limitations or standards.
- (8) “Monitor system malfunction” means any interruption in the collection of valid data as a result of the failure of any component of the system to operate within the specifications of the applicable performance specification.
- (9) “Out of control” means any data collected by a continuous monitoring system during periods immediately following an out of tolerance quality assurance assessment and prior to an acceptable quality assurance assessment.
- (10) “Permit” means any applicable permit issued, renewed, amended, revised, or modified under 326 IAC 2-1, 326 IAC 2-2, 326 IAC 2-3, 326 IAC 2-7, 326 IAC 2-8, or 326 IAC 2-9.
- (11) “Quality assurance” means those activities performed to ensure that monitoring data are sufficiently representative, accurate, precise, reliable, frequent, and timely. Those activities include, but are not limited to, frequent activities (daily) and less frequent activities (weekly, monthly, quarterly, and yearly).

*Copies of the Code of Federal Regulations (CFR) referenced may be obtained from the Government Printing Office, Washington, D.C. 20402 and are available for copying at the Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Indianapolis, Indiana 46206-6015.

[As added at: 21 IR 2062.]

326 IAC 3-4-2 ----- General provisions: certification

Each report submitted under this article shall contain certification of truth, accuracy, and completeness. This certification and any other certification required under this article shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

[As added at: 21 IR 2063.]

326 IAC 3-4-3 ----- General provisions: conversion factors

(a) Owners or operators of facilities subject to this article shall use the following procedures for converting monitoring data to units of the standard where necessary:

- (1) For fossil fuel-fired steam generators, the following procedures shall be used to convert gaseous emission monitoring data in parts per million (ppm) to pounds per million British thermal units (Btu) (lbs/MMBtu) where necessary:

- (A) When the owner or operator of a fossil fuel-fired steam generator elects under this article to measure oxygen (O₂) in flue gases, the measurements of the pollutant concentration and oxygen shall be on a dry basis and the following conversion procedure used:

$$E = CF \frac{(20.9)}{(20.9 - \% O_2)}$$

- (B) When the owner or operator elects under this article to measure carbon dioxide (CO₂) in flue gases, the measurement of the pollutant concentration and the CO₂ concentration shall each be on a consistent basis (wet or dry) and the following conversion procedure used:

$$E = CF_c \frac{(100)}{(\% CO_2)}$$

- (C) When the owner or operator elects under this article to measure sulfur dioxide (SO₂) or nitrogen oxides (NO_x) in the flue gases, the measurement of the diluent concentration and the SO₂ and the NO_x concentration shall each be on a wet basis and the following conversion procedure used, except where wet scrubbers are employed or where moisture is otherwise added to the stack gases:

$$E = C_{ws} F_w \frac{(20.9)}{(20.9(1 - B_{wa}) - \% O_{2ws})}$$

- (D) When the owner or operator elects under this article to measure SO₂ or NO_x in the flue gases, the measurement of the diluent concentration and the SO₂ and the NO_x concentration shall each be on a wet basis and the following conversion procedure shall be used where wet scrubbers or moisture is otherwise present in the stack gases, provided water vapor content of the stack gas is measured at least once every fifteen (15) minutes at the same point as the pollutant and oxygen measurements are made:

$$E = C_{ws} F \frac{(20.9)}{(20.9(1 - B_{ws}) - \% O_{2ws})}$$

(E) The values used in the equations under this subdivision are derived as follows:

- C_{ws} = Pollutant concentration at stack conditions in grams per wet standard cubic meter (g/wscm) or pounds per wet standard cubic meter (lbs/wscm), determined by multiplying the average concentration in parts per million (ppm) for each one (1) hour period by 4.15×10^{-5} M g/wscm per ppm or 2.59×10^{-9} M lbs/wscm per ppm, where M is pollutant molecular weight in grams per gram-mole (g/g-mole) or pounds per pound-mole (lb/lb-mole).
- M = 64.07 for SO_2 and 46.01 for oxides of nitrogen (NO_x) as NO_2 .
- C = Pollutant concentration at stack conditions in pounds per dry standard cubic meter (lbs/dscm) or grams per dry standard cubic meter (g/dscm).
- F, F_c = A factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F), and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (F_c), respectively. Values of F and F_c are given in 40 CFR 60*, Appendix A, Method 19, as applicable.
- F_w = A factor representing a ratio of the volume of wet flue gases generated to the calorific value of the fuel combusted. Values of F_w are given in 40 CFR 60*, Appendix A, Method 19.
- B_{wa} = Proportion by volume of water vapor in the ambient air.
- B_{ws} = Proportion by volume of water vapor in the stack gas.
- E = Pollutant emission, lbs/MMBtu.
- Percent O_2 , percent CO_2 = Oxygen or carbon dioxide volume (expressed as percent) determined with equipment specified under this article.
- Percent O_{2ws} = Oxygen volume (expressed as percent) measurements made at stack conditions on a wet basis.

(2) For sulfuric acid plants or production facilities, the owner or operator shall:

- (A) establish a conversion factor three (3) times daily according to the procedures of 40 CFR 60.84(b)*;
- (B) multiply the conversion factor by the average sulfur dioxide (SO_2) concentration in the flue gases to obtain average SO_2 emissions in pounds per ton (lbs/ton); and
- (C) report the average sulfur dioxide emissions for each three (3) hour period in excess of the emission standard set forth in 326 IAC 7 in the quarterly summary.

(b) Alternate procedures for computing emission averages that do not require integration of data or alternative methods of converting pollutant concentration measurements to units of the emission standard may be approved by the department if the owner or operator shows that the alternate procedures are at least as accurate as those in this rule.

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[As added at: 21 IR 2063.]

RULE 5. CONTINUOUS MONITORING OF EMISSIONS

326 IAC 3-5-1 ----- Continuous monitoring: applicability; monitoring requirements for applicable pollutants

- (a) This rule establishes the following:
 - (1) Substantive requirements for monitoring certain types of sources.
 - (2) A process for developing suitable monitoring requirements for other types of sources.
- (b) This rule applies to the following sources and facilities hereinafter referred to as affected facilities:
 - (1) Any facility required to perform continuous monitoring under 326 IAC 12, which incorporates by reference the requirements of 40 CFR 60*, or by a standard for hazardous air pollutants under 326 IAC 14, which incorporates by reference the requirements of 40 CFR 61*, or 326 IAC 20, which incorporates by reference the requirements of 40 CFR 63*.
 - (2) Fossil fuel-fired steam generators of greater than one hundred million (100,000,000) British thermal units (Btus) per hour heat input capacity.
 - (3) Sulfuric acid plants or production facilities of greater than three hundred (300) tons per day acid production capacity.
 - (4) Petroleum refinery catalyst regenerators for fluid bed catalytic cracking units of greater than twenty thousand (20,000) barrels (eight hundred forty thousand (840,000) gallons) per day fresh feed capacity.
 - (5) Portland cement plants.
 - (6) Facilities that combust sewage sludge.
 - (7) Sources making coke from raw materials, including the following:
 - (A) Coal refining byproducts.
 - (B) Petroleum refining byproducts.
 - (8) Facilities in Clark and Floyd Counties that:
 - (A) have potential to emit NO_x greater than or equal to forty (40) tons per year; and
 - (B) are located at sources that have potential to emit NO_x greater than or equal to one hundred (100) tons per year as described in 326 IAC 10.
- (c) Sources and facilities described in subsection (b) are subject to the following requirements or an approved streamlined requirement established in accordance with 326 IAC 2-7-24:
 - (1) Any facility subject to 326 IAC 12, which incorporates by reference the requirements of 40 CFR 60*, 326 IAC 14, which incorporates by reference the requirements of 40 CFR 61*, or 326 IAC 20, which incorporates by reference the requirements of 40 CFR 61*, shall comply with the following:
 - (A) The monitoring and reporting requirements as specified for the applicable rule.
 - (B) All requirements of this rule.
 - (2) Fossil fuel-fired steam generators of greater than one hundred million (100,000,000) Btu per hour heat input capacity shall monitor the following:
 - (A) Opacity, unless:

- (i) Gaseous fuel is the only fuel combusted.
 - (ii) Oil or a mix of gas and oil are the only fuels combusted and the facility is able to comply with both of the following without using particulate matter collection equipment:
 - (AA) 326 IAC 5-1.
 - (BB) 326 IAC 6-2.
 - (iii) An alternative monitoring requirement request has been granted by the department. An alternative monitoring requirement may be requested when installation of an opacity monitoring system would not provide accurate determinations of emissions as a result of interference from condensed uncombined water vapor. Any alternative monitoring requirement request shall address the following:
 - (AA) Information pertaining to the inability of the affected facility to find an acceptable monitoring location prior to the source of the condensed, uncombined water vapor.
 - (BB) A list of proposed alternative monitoring requirements. For each proposed alternative monitoring requirement, the request must provide a detailed description of thresholds or triggers for corrective action resulting from deviation from normal operating parameters and how deviations from key surrogate parameters shall be addressed to insure continuous compliance with all applicable particulate and opacity requirements. An example of an acceptable alternative monitoring requirement is a particulate compliance demonstration that is no less frequent than annual in accordance with 326 IAC 3-6 and a compliance monitoring plan that, at a minimum, satisfies monitoring requirements under 326 IAC 2-7 or 326 IAC 2-8.
 - (CC) Record keeping that is consistent with section 6 of this rule.
 - (DD) Reporting frequency that is no less frequent than that required in section 7 of this rule.
 - (iv) An alternative monitoring requirement request granted by the department under item (iii) shall be submitted to U.S. EPA as a SIP revision and shall not be in effect until approved as a SIP revision.
- (B) Sulfur dioxide (SO₂) under the following conditions:
- (i) SO₂ pollution control equipment has been installed.
 - (ii) A monitor is required to determine compliance with either of the following:
 - (AA) 326 IAC 12.
 - (BB) A construction permit required under 326 IAC 2.
- (C) Nitrogen oxide (NO_x) under the following conditions:
- (i) NO_x pollution control equipment has been installed.
 - (ii) A monitor is required to determine compliance with either of the following:
 - (AA) 326 IAC 12.
 - (BB) A construction permit required under 326 IAC 2.
- (D) The percent O₂ or CO₂ if measurements of O₂ or CO₂ in the flue gas are required to convert either SO₂ or NO_x continuous monitoring data, or both, to units of the emission limitation for the particular facility.
- (3) Sulfuric acid plants or production facilities of greater than three hundred (300) tons per day acid production capacity shall monitor SO₂ for each sulfuric acid producing facility within the source.
 - (4) Petroleum refinery catalyst regenerators for fluid bed catalytic cracking units of

greater than twenty thousand (20,000) barrels (eight hundred forty thousand (840,000) gallons) per day fresh feed capacity shall monitor opacity for each re-generator within the source.

- (5) Portland cement plants shall monitor opacity at the following facilities:

(A) Kilns.

(B) Clinker coolers.

- (6) Facilities that combust sewage sludge shall monitor from the effluent gas exiting incinerator the following:

(A) Total hydrocarbons.

(B) Oxygen.

(C) Moisture, unless an alternative method is approved by the department and the U.S. EPA.

(D) Temperature.

- (7) Sources making coke from coal shall monitor opacity on the underfire stack associated with each coke oven battery.

- (8) Facilities in Clark and Floyd Counties that have potential to emit NO_x greater than or equal to forty (40) tons per year and are located at sources that have potential to emit NO_x greater than or equal to one hundred (100) tons per year shall install NO_x continuous emission monitors as described in 326 IAC 10-1.

(d) The department may require, as a condition of a construction or operating permit issued under 326 IAC 2-1, 326 IAC 2-2, 326 IAC 2-3, 326 IAC 2-7, 326 IAC 2-8, or 326 IAC 2-9 that the owner or operator of a new or existing source of air emissions monitor emissions to ensure compliance with the following:

- (1) An emission limitation or standard established in one (1) of the permits listed in subsection (d) [this subsection].

- (2) Permit requirements.

- (3) Monitoring requirements in 326 IAC 7.

- (e) Unless explicitly stated otherwise, nothing in this rule shall:

- (1) Excuse the owner or operator of a source from any monitoring, record keeping, or reporting requirement that applies under any provision of the CAA or state statutes or regulations.

- (2) Restrict the authority of the department to impose additional or more restrictive monitoring, record keeping, testing, or reporting requirements on any owner or operator of a source under any other provision of the CAA, including Section 114(a)(1), or state statutes or regulations, as applicable.

(f) Within one hundred eighty (180) days of start-up or, for a source existing on the effective date of this rule, within three hundred sixty-five (365) days of becoming an affected facility under this rule, all continuous monitoring systems shall be installed, operational, and the certification testing complete pursuant to section 3 of this rule.

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[As added at: 21 IR 2064.]

326 IAC 3-5-2 ----- Continuous monitoring: minimum performance and operating specifications

Owners and operators of monitoring equipment installed to comply with this rule shall comply with the performance specifications and operating requirements as follows:

- (1) Performance specifications set forth in 40 CFR 60*, Appendix B, shall be used to certify monitoring equipment installed pursuant to this rule; however, where reference is made to the administrator in 40 CFR 60*, Appendix B, the term "depart-

ment” shall be inserted for purposes of this rule, and where continuous emissions monitors were installed prior to March 1983 for measuring opacity, the performance specifications in 40 CFR 60*, Appendix B, 1982 Edition, shall apply.

- (2) Cycling times, which include the total time a monitoring system requires to sample, analyze, and record an emission measurement, shall be as follows:
 - (A) Continuous monitoring systems for measuring opacity shall complete a minimum of one (1) cycle of operation (sampling, analyzing, and data recording) for each successive ten (10) second period.
 - (B) Continuous monitoring systems that measure the following emissions shall complete a minimum of one (1) cycle of operation (sampling, analyzing, and data recording) for each successive fifteen (15) minute measuring period:
 - (i) Carbon dioxide (CO₂).
 - (ii) Carbon monoxide (CO).
 - (iii) Hydrogen sulfide (H₂S).
 - (iv) Oxides of nitrogen (NO_x).
 - (v) Oxygen (O₂).
 - (vi) Sulfur dioxide (SO₂).
 - (vii) Total hydrocarbons (THC).
 - (viii) Total reduced sulfur (TRS).
 - (ix) Volatile organic compounds (VOC).
- (3) For opacity monitoring when effluent from two (2) or more affected facilities is combined before being released to the atmosphere, the owner or operator may either:
 - (A) install a continuous opacity monitoring system on the combined effluent; or
 - (B) install a continuous opacity monitoring system comprised of, and capable of combining the signals from, component transmissometers on each effluent stream.

Results shall be reported on combined effluent. This requirement shall not apply to facilities utilizing wet flue gas desulfurization equipment. For facilities using wet flue gas desulfurization equipment, opacity may be reported on the combined exhaust or on individual exhausts except as provided for facilities affected by an NSPS as described at 40 CFR 60.13(i)*. Compliance for facilities that opt to report on the individual exhausts shall be determined on the individual exhausts based on data provided in accordance with section 7 of this rule.
- (4) When the effluent from two (2) or more affected facilities subject to the same emission standard, other than opacity, are combined before being released to the atmosphere, the owner or operator may report the results as required for each affected facility or for the combined effluent.
- (5) Instrument full-scale response or upper limit of concentration measurement range for all opacity monitoring systems shall be set at one hundred percent (100%) opacity if possible. If the monitoring system is a requirement of 40 CFR 60*, 40 CFR 61*, 40 CFR 63*, or 40 CFR 75*, then the appropriate instrument span values and cycling times pursuant to the applicable part shall be used. In all cases, the manufacturer's procedures for calibration shall be followed and may result in an upscale maximum response of less than one hundred percent (100%). The minimum instrument full-scale response for gaseous monitoring systems shall be set at two hundred percent (200%) of the expected instrument data display output corresponding to the emission limitation for the facility unless a request for an alternative setting that provides the following information is submitted to and approved by the department in writing:
 - (A) The proposed alternate instrument span value.
 - (B) The expected range of pollutant measured concentrations.

- (C) The control device in use.
- (D) The process to be controlled.
- (E) The location of the monitor, such as stack or duct.
- (F) The reason for requesting the alternate instrument span value.
- (6) Locations for installing continuous monitoring systems or monitoring devices that vary from locations provided under the performance specifications of 40 CFR 60*, Appendix B, shall be approved by the department and the U.S. EPA upon a demonstration by the owner or operator that installation at alternative locations will enable accurate and representative measurements.
- (7) Owners or operators of affected facilities shall conduct continuous emission monitoring system performance evaluations, upon the request of the department, to demonstrate continuing compliance of the continuous emission monitoring systems with performance specifications as follows:
 - (A) A performance evaluation is a quantitative and qualitative evaluation of the performance of the continuous emission monitor in terms of:
 - (i) accuracy;
 - (ii) precision;
 - (iii) reliability;
 - (iv) representativeness; and
 - (v) comparability;of the data acquired by the monitoring system.
 - (B) The department may request owners or operators of affected facilities, as defined in section 1(b) of this rule, to conduct continuous emission monitoring system performance evaluations if the department has reason to believe, based on review of monitoring data, quality assurance data, inspections, or other information, that the continuous emission monitoring system is malfunctioning or may be providing invalid data over an extended period.
 - (C) A written report containing the complete information of the performance evaluations shall be furnished to the department within forty-five (45) days after the test date. The department may conduct performance evaluations of the continuous emission monitoring systems at any time in order to verify the continued compliance of the systems with the performance specifications.

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[As added at: 21 IR 2066.]

326 IAC 3-5-3 ----- Continuous monitoring: monitor system certification

Monitor system certification requirements apply to sources and facilities subject to this rule as follows:

- (1) The owner or operator shall conduct the applicable performance specifications tests in accordance with the procedures specified in 40 CFR 60*, or other applicable federal regulations, for the required monitoring system as follows:
 - (A) Not later than one hundred eighty (180) days after a facility start-up or initial monitor installation date.
 - (B) Not later than forty-five (45) unit operating days after monitor replacement date, or significant monitor repair as described in IDEM's Quality Assurance Manual, Chapter 20 (dated June 20, 1997)*, which affects the ability of the analyzer to function date.
- (2) The owner or operator shall notify the department in writing as follows:

- (A) No less than fourteen (14) days in advance of the start of continuous opacity monitor (COM) certification.
- (B) No less than thirty-five (35) days in advance of the certification of a gaseous monitoring system.
- (3) The owner or operator shall submit all the required test data and information in the form of a written report to the department for review and approval within forty-five (45) days of completion of the performance specification test.
- (4) The department shall issue a written notice of certification status upon review of the complete certification test report. A required monitoring system is certified when the department issues a certification letter stating that the required monitoring system, including all applicable components, has satisfactorily met all federal and state monitoring requirements.
- (5) The department may decertify a required monitoring system if an audit or performance evaluation reveals that such monitoring system or a component thereof does not meet applicable performance specifications or requirements. The owner or operator shall repeat the certification process for the required monitoring system within forty-five (45) days of the date of the department's decertification of the required monitoring system.

*Copies of IDEM's Quality Assurance Manual, Chapter 20 (dated June 20, 1997) are available for copying at the Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Indianapolis, Indiana 46206-6015.

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[As added at: 21 IR 2067.]

326 IAC 3-5-4 ----- Continuous monitoring: standard operating procedures

(a) The owner or operator of each affected facility specified in section 1(b) of this rule, any facility subject to 326 IAC 12, or any other facility required to monitor emissions on a continuous basis shall submit to the department, within ninety (90) days after monitor installation, a complete, written continuous monitoring standard operating procedures (SOP). If revisions are made to the SOP, updates shall be submitted to the department biennially. At a minimum, the SOP shall describe complete step-by-step procedures and operations as follows:

- (1) A description of the facility monitored.
- (2) A listing of the following:
 - (A) Each monitor's brand.
 - (B) Model number.
 - (C) Serial number.
 - (D) Monitoring location.
 - (E) Data handling and acquisition system.
- (3) Examples of all reporting and log forms.
- (4) Record keeping and reporting procedures that include the following:
 - (A) Reporting of instrument precision and accuracy.
 - (B) Reporting of emissions data.
- (5) Methods and procedures for analysis and data acquisition.
- (6) Calibration procedures that include the following:
 - (A) Calibration error limits and linearity.
 - (B) Calibration gas type, gas quality, and traceability to the National Institute of Standards and Technology.

- (C) Calibration frequency.
- (D) Criteria for recalibration, and analysis procedures to periodically verify the accuracy of span and calibration standards.
- (7) Operation procedures that include daily procedures, quantifying and recording daily zero (0) and high level drift that meet the requirements of 40 CFR 60*, Appendix B, Performance Specification 2, Section 4.2 or other applicable regulations, and other operating parameter checks indicating correct operational status.
- (8) Quality control and quality assurance procedures that include the following:
 - (A) A statement of quality policy and objectives.
 - (B) Organization and responsibilities description.
 - (C) Calibration and span and zero (0) drift criteria.
 - (D) Excessive drift criteria.
 - (E) Corrective action for excessive drift.
 - (F) Precision and accuracy audits.
 - (G) Corrective action for accuracy audits failure.
 - (H) Data validity criteria.
 - (I) Participation in department audits.
 - (J) Data recording and calculation audits.
- (9) Preventive maintenance procedures and corrective maintenance procedures that include those procedures taken to ensure continuous operation and to minimize malfunctions.
- (10) A listing of the manufacturer's recommended spare parts inventory.
- (b) If a facility owner or operator fails to submit a SOP or submits a SOP that fails to address the factors provided under subsection (a), the department may require a performance evaluation pursuant to section 2 of this rule.

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[As added at: 21 IR 2068.]

326 IAC 3-5-5 ----- Continuous monitoring: quality assurance requirements

(a) Except where 40 CFR 75* is applicable for affected facilities under the acid rain program, quality assurance requirements specified in this section and 40 CFR 60*, Appendix F, apply to continuous emission monitors that monitor the following:

- (1) Carbon dioxide (CO₂).
- (2) Carbon monoxide (CO).
- (3) Hydrogen sulfide (H₂S).
- (4) Nitrogen oxide (NO_x).
- (5) Oxygen (O₂).
- (6) Sulfur dioxide (SO₂).
- (7) Total hydrocarbons (THC).
- (8) Total reduced sulfur (TRS).
- (9) Volatile organic compounds (VOC).

(b) Facilities that are subject to 40 CFR 75* shall follow the quality assurance procedures of 40 CFR 75* and report the results in accordance with subsection (e).

(c) Quality control (QC) requirements for continuous opacity monitoring systems (COMS) are as follows:

- (1) For calibration drift (CD) assessment, the COMS shall be checked at least once

daily. The CD shall be quantified and recorded at zero (0) (or low level) and upscale level opacity. The COMS shall be adjusted whenever the CD exceeds the specification of 40 CFR 60*, Appendix B, Performance Specification 1 (PS-1), and the COMS shall be declared out of control when the CD exceeds twice the specification of PS-1. Corrective actions, followed by a validating CD assessment, are required when the COMS is out of control.

- (2) For fault indicators assessment, the fault lamp indicators, data acquisition system error messages, and other system self-diagnostic indicators shall be checked at least daily. Appropriate corrective actions shall be taken when the COMS is operating outside the preset limits.
- (3) For performance audits, checks of the individual COMS components and factors affecting the accuracy of the monitoring data, as described in this subdivision, shall be conducted, at a minimum, on a calendar quarter basis. The absolute minimum checks included in the performance audit are as follows:
 - (A) The status of the optical alignment of the monitor components shall be checked and recorded according to the procedure specified by the monitor manufacturer. Monitor components must be realigned as necessary.
 - (B) The apparent effluent opacity shall be compared and recorded before and after cleaning each of the exposed optical surfaces. The total optical surface dust accumulation shall be determined by summing up the apparent reductions in opacity for all of the optical surfaces that are cleaned. Caution should be employed in performing this check since fluctuations in effluent opacity occurring during the cleaning cycle may adversely affect the results.
 - (C) The zero (0) and upscale response errors shall be determined and recorded according to the CD procedures. The errors are defined as the difference (in percent opacity) between the correct value and the observed value for the zero (0) and high level calibration checks.
 - (D) The value of the zero (0) compensation applied at the time of the audit shall be calculated as equivalent opacity, corrected to stack exit conditions, according to the procedures specified by the manufacturer. The compensation applied to the effluent recorded by the monitor system shall be recorded.
 - (E) The optical pathlength correction ratio (OPLR) shall be computed from the monitor pathlength and stack exit diameter and shall be compared, and the difference recorded, to the monitor setup OPLR value. The stack exit correlation error shall be determined as the absolute value of the difference between the measured value and the correct value, expressed as a percentage of the correct value.
 - (F) A three-point calibration error test of the COMS shall be conducted. Three (3) neutral density filters meeting the requirements of PS-1 shall be placed in the COMS light beam path. The monitor response shall be independently recorded from the COMS permanent data recorder. Make a total of five (5) nonconsecutive readings for each filter. The low-range, mid-range, and high-range calibration error results shall be computed as the mean difference and ninety-five percent (95%) confidence interval for the difference between the expected and the actual responses of the monitor as corrected to stack exit conditions. These values shall be calculated using the procedure of PS-1, Section 8.0. The following are requirements for these values:
 - (i) The calibration error test requires the installation of an external calibration audit device (zero-jig). The zero-jig shall be adjusted to provide the same zero (0) response as the monitor's simulated zero (0).
 - (ii) Use calibration attenuators, that is, neutral density filters or screens, with values that have been determined according to PS-1, Section 7.1.3, "Attenuator Calibration", and produce simulated opacities (as corrected to stack exit conditions) in the ranges listed in Table 1-2 in PS-1.

- (iii) The stability of the attenuator values shall be checked at least once per year according to the procedures specified in PS-1. The attenuators shall be recalibrated if the stability checks indicate a change of two percent (2%) opacity or greater.
- (4) The following are requirements for monitor acceptance criteria:
 - (A) The following criteria are to be used for determining if the COMS audit results are acceptable:

TABLE 1. PERFORMANCE AUDIT CRITERIA

Stack Exit Correlation Error	- 2 percent
Zero and Upscale Responses	- 2 percent opacity
Zero Compensation	- 4 percent opacity
Optical Alignment	Misalignment error
	- 2 percent opacity
Optical Surface Dust Accumulation	- 4 percent opacity
Calibration Error	- 3 percent opacity

- (B) The COMS is out of control whenever the results of a quarterly performance audit indicate noncompliance with any of the performance assessment criteria of Table 1 in clause (A). If the COMS is out of control, the owner or operator must take the action necessary to eliminate the problem. Following corrective action, the source owner or operator must reconduct the appropriate failed portion of the audit and other applicable portions to determine whether the COMS is operating properly and within specifications. The COMS owner or operator shall record both audit results showing the COMS to be out of control and the results following corrective action. COMS data obtained during any out of control period may not be used for compliance determination; the data may be used for identifying periods where there has been a failure to meet quality assurance and control criteria.
 - (C) Repeated audit failures, that is, out of control conditions resulting from the quarterly audits, indicate that the QC procedures are inadequate or the COMS is incapable of providing quality data. The source owner or operator shall increase the frequency of the above QC procedures until the performance criteria are maintained or modify or replace the COMS whenever two (2) consecutive quarters of unacceptable performance occur.
 - (5) The performance audit calculations contained in PS-1, Section 8 shall be followed.
 - (d) Except where 40 CFR 75* is applicable for affected facilities under the acid rain program, quality control requirements for flow monitoring systems are as follows:
 - (1) For CD assessment, the flow monitoring system shall be checked at least once daily. The CD shall be quantified and recorded at zero (0) (or low level) and up-scale level. The flow monitoring systems shall be adjusted whenever the CD exceeds the specification of 40 CFR 60*, Appendix B, Performance Specification 6 (PS-6), and the flow monitoring systems shall be declared out of control when the CD exceeds twice the specification of PS-6. Corrective actions, followed by a validating CD assessment, are required when the flow monitoring system is out of control.
 - (2) An annual relative accuracy test.
 - (e) Reporting requirements for performance audits are as follows:
 - (1) Owners or operators of facilities required to conduct:
 - (A) cylinder gas audit;
 - (B) relative accuracy test audit; or
 - (C) continuous opacity monitor calibration error audit;
- on continuous emission monitors shall prepare a written report of the results of the performance audit for each calendar quarter, or for other periods required by

the department. Quarterly reports shall be submitted to the department within thirty (30) calendar days after the end of each quarter.

(2) The performance audit report shall contain the following information:

(A) Plant and monitor information, including the following:

- (i) The plant name and address.
- (ii) The monitor brand, model, and serial number.
- (iii) The monitor span.
- (iv) The monitor location, for example, duct, boiler, unit, or stack designation.

(B) Performance audit information, including the following:

- (i) The auditor's name.
- (ii) A copy of the audit standard's certification, for example, the vendor's Protocol 1 certification, or neutral density filter certification.
- (iii) All data used to calculate the audit results.
- (iv) The audit results and an indication if the monitor passed or failed the audit. If the performance audit results show the CEMS or COMS to be out of control, the CEMS or COMS owner or operator must report both the audit results showing the CEMS or COMS to be out of control and the results of the audit following corrective action showing the COMS to be operating within specification.

(v) Any corrective actions performed as the result of a failed audit.

(f) If a relative accuracy test audit of any continuous emission monitor listed in subsection (a) is performed, the department must be notified at least thirty-five (35) days prior to the audit.

*Copies of the Code of Federal Regulations (CFR) referenced may be obtained from the Government Printing Office, Washington, D.C. 20402 and are available for copying at the Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Indianapolis, Indiana 46206-6015.

[As added at: 21 IR 2069.]

326 IAC 3-5-6 ----- Continuous monitoring: record keeping requirements

(a) On and after the certification of a monitoring system, the owner or operator of a source subject to this rule shall maintain records, including raw data, of all monitoring data and supporting information for a minimum of five (5) years from the date of any of the following:

- (1) A monitoring sample.
 - (2) A measurement.
 - (3) A test.
 - (4) A certification.
 - (5) A report.
 - (6) Any other activity required under this article.
- (b) The records described in subsection (a) shall include the following:
- (1) All documentation relating to:
 - (A) design, installation, and testing of all elements of the monitoring system; and
 - (B) required corrective action or compliance plan activities.
 - (2) All maintenance logs, calibration checks, and other required quality assurance activities.
 - (3) All records of corrective and preventive action.
 - (4) A log of plant operations, including the following:
 - (A) Date of facility downtime.

(B) Time of commencement and completion of each downtime.

(C) Reason for each downtime.

(c) The owner or operator of a source subject to this rule shall maintain the records required by this section at the source, or at such other site, in a manner so that they may be inspected by the department or the U.S. EPA, if so requested or required.

[As added at: 21 IR 2071.]

326 IAC 3-5-7 ----- Continuous monitoring: reporting requirements

The following reporting requirements apply to sources subject to this rule:

- (1) Sources subject to the requirements of section 1 of this rule shall report excess emissions no less frequently than quarterly. For sources required to report quarterly, such reports shall be:
 - (A) submitted by the facility owner or operator to the department; and
 - (B) postmarked or delivered by other means no later than thirty (30) calendar days following the last day of the reporting period.
- (2) If a permit specifies or a rule requires more frequent reports, such reports shall be:
 - (A) submitted by the facility owner or operator to the department; and
 - (B) postmarked or delivered by other means no later than fifteen (15) calendar days after the end of each month.
- (3) Gaseous excess emissions data reports shall be reported using three (3) hour block periods ending at 03:00, 06:00, 09:00, 12:00, 15:00, 18:00, 21:00, and 24:00. For facilities that must demonstrate compliance with hourly (one (1) hour), daily (twenty-four (24) hour) average, or thirty (30) day averages, such information shall be submitted as part of the quarterly report required in this section.
- (4) The monitoring report shall contain the following continuous monitoring information summaries, with all times reported in real time:
 - (A) Monitored facility operation time during the reporting period.
 - (B) Excess emissions or parameters, as applicable, reported in units of the standard, or the applicable parameter unit as follows:
 - (i) Date of excess emissions, or other applicable dates.
 - (ii) Time of commencement and completion for each applicable parameter deviation or excess emission data.
 - (C) Magnitude of each excess emission as follows:
 - (i) For opacity as follows:
 - (AA) The actual percent opacity of all six (6) minute (block) averages exceeding the applicable opacity limit shall be reported. If the exceedance occurs continuously beyond one (1) six (6) minute period, the percent opacity for each six (6) minute period or the highest six (6) minute average opacity for the entire period shall be reported.
 - (BB) For department approved opacity averaging times other than six (6) minutes, the actual percent opacity of each averaging period in excess of the applicable limit shall be reported.
 - (CC) A summary by cause shall be prepared and submitted as part of this report itemizing exceedances by cause.
 - (ii) For gaseous emissions, the excess emissions, in units of the applicable standard, must be reported based on the applicable averaging time, for example, one (1) hour block, three (3) hour block, three (3) hour rolling, in addition to any other reporting requirements that may be applicable. The averaging time is specified in the applicable federal or state rules, or facility operating permit.

- (5) Continuous monitoring system instrument downtime, except for zero (0) and span checks, which shall be reported separately, shall include the following:
 - (A) Date of downtime.
 - (B) Time of commencement.
 - (C) Duration of each downtime.
 - (D) Reasons for each downtime.
 - (E) Nature of system repairs and adjustments.

[As added at: 21 IR 2071.]

RULE 6. SOURCE SAMPLING PROCEDURES

326 IAC 3-6-1 ----- Source sampling procedures: applicability; test procedures

This rule applies to any facility emissions testing performed to determine compliance with applicable emission limitations contained in this title, or for any other purpose requiring review and approval by the department (such as an alternate emission factor determination). Emission tests subject to this rule shall be conducted in accordance with any applicable procedures and analysis methods specified in 40 CFR 51*, 40 CFR 60*, 40 CFR 61*, 40 CFR 63*, 40 CFR 75*, or other procedures approved by the department.

*Copies of the Code of Federal Regulations (CFR) referenced may be obtained from the Government Printing Office, Washington, D.C. 20402 and are available for copying at the Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Indianapolis, Indiana 46206-6015.

[As added at: 21 IR 2072.]

326 IAC 3-6-2 ----- Source sampling procedures: source sampling protocols

(a) When an emissions test is to be performed by any person other than the department, the source shall complete a test protocol form and submit the test protocol form to the department not later than thirty-five (35) days prior to the intended test date unless more notice is required under the applicable program. Such test protocol shall be on a form approved by the department or shall contain information equivalent to that required on the form approved by the department.

(b) After evaluating the completed test protocol form, the department may:

- (1) inspect the test site; or
- (2) require additional conditions, including, but not limited to:
 - (A) reasonable modifications to the stack or duct to obtain acceptable test conditions;
 - (B) additional tests to allow for adverse conditions such as interferences, nonsteady, or cyclic processes;
 - (C) keeping process operating parameter records, operating logs, or charts during the test;
 - (D) conditions on control equipment operation to make the operation of control equipment representative of normal operation; or
 - (E) recording specified control equipment operating parameters during the test.

(c) If the department requires modification to test methods, analytical methods, operational parameters, or other matters included in the emissions test protocol, the department shall notify the source operator and the testing firm by letter or telephone not later than twenty-one (21) days prior to the test date.

(d) If the source operator or test firm desires to change previously submitted procedures or conditions, the department shall be notified of such change as soon as practicable prior to the intended emissions test date. Such changes shall not be made unless approved by the department prior to the emission test.

(e) Reasonable changes in the emissions test protocol that result from emergency conditions during the test shall be approved by the department if a department staff person is available at the test site before the test may proceed.

(f) Post-test approval may be granted based on reasonable changes resulting from emergency or reasonably unforeseeable conditions during the test.

(g) The department reserves the right to conduct any portion of the reference method tests using equipment supplied by the department. Notice of acceptable test procedures shall be given to the source and its testing representative.

(h) The source operator shall schedule an actual test date and time period and notify the department not later than fourteen (14) days prior to the actual test date. In the event that a previously scheduled test must be canceled and rescheduled, the source shall notify the department no less than fourteen (14) days in advance of the rescheduled test date.

[As added at: 21 IR 2072.]

326 IAC 3-6-3 ----- Source sampling procedures: emission testing

(a) Department staff may observe field test procedures and source operation during the emission test.

(b) All emission tests shall be conducted as follows:

- (1) While the facility being tested is operating at ninety-five percent (95%) to one hundred percent (100%) of its permitted operating capacity.
- (2) Under conditions representative of normal operations.
- (3) Under other capacities or conditions specified and approved by the department. As used in this subdivision, "capacity" means the design capacity of the facility or other operating capacities agreed to by the source and the department.

(c) Facilities subject to 326 IAC 12, New Source Performance Standards, or 326 IAC 20, Hazardous Air Pollutants, shall be tested under conditions as specified in the applicable provision for that facility in 40 CFR 60* or 40 CFR 63* and this rule where appropriate.

(d) The source shall make available at the test site calibration results of the various sampling components. The information shall include the following:

- (1) The date or dates the test was performed.
- (2) The methods used.
- (3) The data.
- (4) The results.

All components requiring calibration shall be calibrated within sixty (60) days prior to the actual test date. Post-test calibrations shall be performed on the components not later than forty-five (45) days after the actual test date. Components requiring calibration are listed in the federal test methods specified in this rule.

(e) The department may perform or require the performance of audits of equipment or procedures associated with the test series up to the time of the actual performance of the test, between test runs, or following the test series. The department reserves the right to perform or observe all associated analyses.

(f) The original or a photocopy of the raw field data generated during the test series shall be provided to the department observer upon request if such request may be reasonably met under the existing circumstances.

*Copies of the Code of Federal Regulations (CFR) referenced may be obtained from the Government Printing Office, Washington, D.C. 20402 and are available for copying at the Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Indianapolis, Indiana 46206-6015.

[As added at: 21 IR 2073.]

326 IAC 3-6-4 ----- Source sampling procedures: reporting

(a) All emission tests for which a protocol was submitted pursuant to section 2 of this rule shall be reported to the department in the form of an emission test report containing the following information:

- (1) The reported testing methods and results certified as true and accurate and in compliance with this rule by the person responsible for conducting the emissions test.
- (2) Information regarding the test, including the following:
 - (A) A description of the facility or facilities being tested.
 - (B) The date or dates on which the test was performed.
 - (C) The type of tests conducted.
 - (D) The type of process and control equipment utilized.
 - (E) The source name and location.
 - (F) The purpose of the tests.
 - (G) The test participants and their titles.
- (3) Tabulated data and results, including the following:
 - (A) The process weight rate or heat input rate.
 - (B) The referenced or derived conversion factors.
 - (C) The stack gas flow rate.
 - (D) Measured emissions given in units consistent with the applicable emission limitations.
 - (E) Visible emissions observations or six (6) minute average continuous opacity monitor readings.
 - (F) Average value of emissions from any continuous gaseous emissions monitoring system in units consistent with the applicable emission limitations if applicable to the pollutant being tested.
- (4) A description of process and control devices, including the following:
 - (A) A process flow diagram.
 - (B) The maximum design capacities.
 - (C) A fuel analysis and heat value for heat input rate determinations.
 - (D) The process and control equipment operating conditions.
 - (E) A discussion of variations from normal plant operations.
 - (F) The stack height.
 - (G) The exit diameter.
 - (H) The volumetric flow rate (cubic feet per minute).
 - (I) The exit temperature.
 - (J) The exit velocity.
- (5) A description of sampling methods used, including the following:
 - (A) Brief discussion of the analytical procedures with justifications for any variance from reference method procedures.
 - (B) Specification of the following:
 - (i) The number of sampling points.
 - (ii) The time per point.
 - (iii) The total sampling time per run.
 - (C) Cross-sectional diagram of the sampling site showing sampling points.
 - (D) Diagram showing the following:
 - (i) The stack dimensions.
 - (ii) The sampling location.

- (iii) The distance from the nearest flow disturbance upstream and downstream of the sampling points.
- (iv) The diagram of the sampling train.
- (6) Sampling and analytical procedures used, including the following:
 - (A) Results and calculations, including the following:
 - (i) Units consistent with the applicable emission limitation.
 - (ii) One (1) complete calculation using actual data for each type of test performed.
 - (iii) Raw production data signed by the source official.
 - (iv) Photocopies of all actual field data.
 - (B) Laboratory report, including the following:
 - (i) The chain of custody.
 - (ii) Copies of all calibration data for equipment used in sampling as described in section 3(d) of this rule.
 - (C) Applicable rules and regulations showing the emission limitations.
 - (D) For particulate matter tests, copies of visible emissions evaluations or opacity monitor readings.
 - (E) Copies of any continuous gaseous emissions monitoring system readings for gaseous pollutant tests.

(b) All emission test reports must be received by the department not later than forty-five (45) days after the completion of the testing. An extension may be granted by the department if the source submits to the department a reasonable written explanation for the requested extension not later than five (5) days prior to the end of the initial forty-five (45) day period.

[As added at: 21 IR 2073.]

326 IAC 3-6-5 ----- Source sampling procedures: specific testing procedures; particulate matter; sulfur dioxide; nitrogen oxides; volatile organic compounds

(a) Particulate matter tests shall be conducted in accordance with the following procedures:

- (1) 40 CFR 60*, Appendix A, Method 5, 5A, 5B, 5C, 5D, 5E, or 5F, as applicable, or other procedures approved by the department.
- (2) Visible emissions (VE) evaluations shall be performed in conjunction with a particulate emissions test by a qualified observer in accordance with the procedures contained in 326 IAC 5-1-4. VE readings shall be continuously recorded for at least thirty (30) minutes per hour of sampling time for each sampling repetition. A waiver from this requirement may be granted by the on-site department staff person if adverse conditions exist that would invalidate the VE readings. Complete waivers may not be granted to facilities required to complete opacity testing pursuant to 40 CFR 60.8*. Facilities equipped with continuous opacity monitors may submit the six (6) minute integrated readings of such monitors during the sampling period, instead of performing VE evaluations, provided:
 - (A) the monitoring system meets the performance specifications as specified in 40 CFR 60*, Appendix B, and is, or will be, certified by the department; and
 - (B) the monitor readings submitted with the test include a zero (0) and upscale calibration check before the first test run and following the end of the final run.
- (3) At least three (3) repetitions of the test shall be performed under consistent facility operating conditions unless otherwise allowed by the department. For boiler emissions testing, at least one (1) of the three (3) repetitions shall be conducted during a normal sootblowing cycle that is consistent with frequency and duration normally experienced.

- (4) At Richmond Power and Light's Whitewater Generating Station, when sootblowing occurs during one (1) of the three (3) repetitions, emission test results shall be evaluated using either a time weighted averaging period (TWAP) or a straight averaging technique. When using TWAP, the following equation shall be used to ensure proper weighting of an intermittent cleaning cycle performance test run regardless of the length of the length of *[sic.]* the cleaning cycle and regardless of the number and duration of the test runs made on the unit. When using TWAP, the representative pounds per hour of particulate emissions shall be calculated using the following equation:

$$E = E_{cc} \frac{(A + B)}{AR} S + E_{ncc} \frac{(R - S)}{R} - \frac{BS}{AR}$$

Where:

- E = Pounds per hour of particulate emissions.
 E_{cc} = Average E of sample containing cleaning cycle.
 E_{ncc} = Average E of sample containing no cleaning cycle.
 A = Hours of cleaning cycle operation during sample.
 B = Hours with no cleaning cycle operation during sample.
 R = Average hours of operation per twenty-four (24) hours.
 S = Average hours of cleaning cycle operation per twenty-four (24) hours.

- (5) Only those fuels representative of normal fuel quality used during normal operations shall be combusted.
- (6) During each repetition, each sampling point shall be sampled for a minimum of two (2) minutes.
- (7) The total test time per repetition shall be no less than sixty (60) minutes.
- (8) The total sample volume per repetition shall be no less than thirty (30) dry standard cubic feet (dscf).
- (9) The total particulate weight collected from the sampling nozzle, probe, cyclone (if used), filter holder (front half), filter, and connecting glassware shall be reported to the department. Particulate analysis of the impinger catch is not required, unless specified by the department.
- (b) Sulfur dioxide (SO_2) tests shall be conducted in accordance with the following procedures:
- (1) 40 CFR 60*, Appendix A, Method 6, 6A, or 6C, or 8, as applicable, or other procedures approved by the department.
- (2) At least three (3) repetitions of two (2) samples, each according to 40 CFR 60*, Appendix A, Method 6, 6A, or 6C, or three (3) repetitions according to 40 CFR 60*, Appendix A, Method 8, performed under identical facility operating conditions, shall constitute a test. For boiler emissions testing, only those fuels representative of fuel quality during normal operations shall be combusted.
- (3) During each of the repetitions for 40 CFR 60*, Appendix A, Method 8, each sampling point shall be sampled for a minimum of two (2) minutes.
- (4) The total test time per repetition shall be as follows:
- (A) For tests using 40 CFR 60*, Appendix A, Method 6, 6A, or 6C, a minimum of twenty (20) minutes per run with a thirty (30) minute interval between each run.
- (B) For tests using 40 CFR 60*, Appendix A, Method 8, a minimum of sixty (60) minutes per run.
- (5) The total sample volume per repetition under 40 CFR 60*, Appendix A, Method 8, shall be no less than forty (40) dry standard cubic feet (dscf).
- (c) Nitrogen oxide (NO_x) tests shall be conducted according to the following procedures:
- (1) 40 CFR 60*, Appendix A, Method 7, 7A, 7B, 7C, or 7E, as applicable, or other procedures approved by the department.

(2) At least three (3) repetitions of four (4) samples each shall constitute a test.

(d) Volatile organic compounds (VOC) emissions tests shall be conducted in accordance with the following procedures:

(1) 40 CFR 60*, Appendix A, Method 25, or other procedures approved by the department, shall be used for the total nonmethane organic emissions.

(2) At least three (3) samples shall be collected and analyzed.

(3) The total test time per repetition shall be a minimum of sixty (60) minutes.

*Copies of the Code of Federal Regulations (CFR) referenced may be obtained from the Government Printing Office, Washington, D.C. 20402 and are available for copying at the Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Indianapolis, Indiana 46204.

[As added at: 21 IR 2074.]

RULE 7. FUEL SAMPLING AND ANALYSIS PROCEDURES

326 IAC 3-7-1 ----- Fuel sampling and analysis procedures: applicability

This rule applies to fuel sampling and analysis performed to determine compliance with the emission limitations specified in 326 IAC 7.

[As added at: 21 IR 2075.]

326 IAC 3-7-2 ----- Fuel sampling and analysis procedures: coal sampling and analysis methods

(a) Owners or operators of coal sampling systems for sources with total coal-fired capacity greater than or equal to one thousand five hundred (1,500) million British thermal units (Btus) per hour actual heat input shall follow procedures specified in ASTM D2234-89*, "Standard Methods for Collection of a Gross Sample of Coal", unless otherwise provided in section 3 of this rule. Additionally, the coal sampling system shall meet the following requirements:

(1) The coal sample acquisition point shall be at a location where representative samples of the total coal flow to be combusted by the facility or facilities may be obtained. A single as-bunkered sampling station may be used to represent the coal to be combusted by multiple facilities using the same stockpile feed system.

(2) The increment collection method is specified in ASTM D2234-89*, Table 1, I-A-1, I-B-1, or I-C-1.

(3) The opening of the sampling device shall be at least two and one-half (2.5) times the top-size of the coal and not less than one and one-fourth (1.25) inches.

(4) The sampling device shall have sufficient capacity to completely retain or entirely pass the increment without loss or spillage.

(5) The velocity with which the cross-stream cutting instrument travels through the stream shall not exceed eighteen (18) inches per second. The velocity requirement shall not apply to a swing-arm sampler or to a sampler whose cutter opening is perpendicular to the stream of coal. Owners or operators of all coal sampling systems shall detail the proper operating procedures in the standard operating procedures document required under section 5 of this rule.

(6) Increments obtained during the sampling period shall be protected from changes in composition to maintain the integrity of constituent characteristics required to convert sample sulfur content to units of the applicable emission standard.

(7) A comparison of weight or volume of collected sample with that of the total flow of coal shall be conducted at a minimum of one (1) time every two (2) weeks to assure a constant sampling ratio is maintained for increments composited into a sample representing a single twenty-four (24) hour period.

(8) A routine inspection of the sampling system shall be established to meet require-

ments and guidelines specified in ASTM D4702-87*, “Guide for Inspecting Mechanical Coal Sampling Systems that Use Cross-Cut Sample Cutters for Conformance with Current ASTM Methods”.

- (9) Composite samples shall be collected for analysis at a minimum of one (1) time per twenty-four (24) hour period.

(b) Owners or operators of coal sampling systems for sources with total coal-fired capacity between one hundred (100) and one thousand five hundred (1,500) million Btus per hour actual heat input shall comply with requirements specified as follows:

- (1) in subsection (a);
- (2) in section 3 of this rule; or
- (3) shall meet the following minimum requirements:

(A) The coal sample acquisition point shall be at a location where representative samples of the total coal flow to be combusted by the facility or facilities may be obtained. A single as-bunkered or as-burned sampling station may be used to represent the coal to be combusted by multiple facilities using the same stockpile feed system.

(B) Coal shall be sampled at least three (3) times per day and at least one (1) time per eight (8) hour period unless no coal is bunkered during the preceding eight (8) hour period.

(C) Minimum sample size shall be five hundred (500) grams.

(D) Samples shall be composited and analyzed at the end of each calendar month.

(c) Coal samples shall be prepared for analysis in accordance with procedures specified in ASTM D2013-86*, “Standard Method of Preparing Coal Samples for Analysis”. The preparation of samples shall meet the following requirements:

- (1) Samples shall be prepared in accordance with ASTM D2013-86*, Procedure A or Procedure B.
- (2) Sample preparation shall be checked at weekly intervals by performing a split sample of the twenty-four (24) hour composite sample and preparing and analyzing these two (2) identically.

(d) The heat content of coal samples shall be determined in accordance with procedures specified in ASTM D2015-95*, “Standard Test Method for Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter”, or ASTM D3286-91A*, “Standard Test Method for Gross Calorific Value of Coal and Coke by the Isothermal Jacket Bomb Calorimeter”. Restandardization requirements in Section 11 of both methods shall be followed. Precision requirements for repeatability shall be verified according to Section 16.1.1 of both methods at a minimum of once per week.

(e) The sulfur content of coal samples shall be determined according to procedures specified in ASTM D3177-89*, “Standard Test Methods for Total Sulfur in the Analysis Sample of Coal and Coke”, or ASTM D4239-94*, “Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods”. Precision requirements for repeatability shall be verified according to ASTM D3177-89*, Section 13, or ASTM D4239-94*, Section 18, at a minimum of one (1) time per week. The laboratory that performs the analysis shall participate in an interlaboratory audit program using coal samples supplied by the department.

(f) Compliance with this section is required unless a source owner or operator demonstrates to the department that modifications to the coal sampling and analysis procedures at a source are necessary to meet the requirements of this section.

*Copies of the American Society for Testing and Materials (ASTM) procedures referenced may be obtained from ASTM, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, (610) 832-9585 and are available for copying at the Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Indianapolis, Indiana 46206-6015.

[As added at: 21 IR 2075.]

326 IAC 3-7-3 ----- Fuel sampling and analysis procedures: alternative coal sampling and analysis methods

(a) As an alternative to the coal sampling and analysis procedures in section 2 of this rule, a source owner or operator may use manual or other non-ASTM automatic sampling and analysis procedures upon a demonstration, submitted to the department for approval, that such procedures provide sulfur dioxide emission estimates representative either of estimates based on coal sampling and analysis procedures specified in section 2 of this rule or of continuous emissions monitoring. The demonstration shall consist of one (1) or more of the following methods:

- (1) A source owner or operator may submit documentation of procedures and results of a stopped-belt bias test or other comparisons between a sampling system meeting the requirements of section 2 of this rule and those methods and procedures proposed by the source owner or operator. A stopped-belt bias test and a sampling system meeting the requirements of section 2 of this rule shall be considered reference method systems. A comparison shall utilize a series of at least twenty-five (25) reference method system samples paired with nonreference method system samples and analyzed for the percent of sulfur content to determine the presence of significant systemic error. The detection of significant systemic error shall be based on the application of a statistical test (t-test) to determine if there is a difference between the reference and nonreference systems at the ninety-five percent (95%) confidence level, according to the following formula:

$$t = \frac{d\sqrt{n}}{Sd}$$

Where: t = Calculated t value.
 d = Average difference between paired data.
 Sd = Standard deviation of the differences.
 N = Number of paired data sets.

The calculated t value is compared to the t value in the standard statistical t tables at the ninety-five percent (95%) probability and the appropriate degrees of freedom (n - 1). If the calculated t value is greater than or equal to the value of t in the t table, then the systems are not comparable. Certain coals with low variability may detect a small bias, which may be acceptable as decided on a case-by-case basis. This method tests for positive and negative bias. Provisions for testing only for a negative bias that would cause a source to report less than actual values may be acceptable if supported by statistical tests. Upon request, the department shall provide written guidance to a source owner or operator as to the procedures to be followed in conducting this comparison.

- (2) Other procedures may be acceptable if submitted to the department for approval and the department approves.

(b) The demonstration provided in subsection (a) shall be repeated upon any significant change to the coal sampling procedures or upon notification by the department that a new demonstration is necessary. If the department has reason to doubt that the alternative sampling and analysis procedures are comparable to methods and procedures provided in section 2 of this rule, based on inspections, monitoring, quality assurance data, or other information, the department may notify the owner or operator that the demonstration shall be repeated. Written notification by the department of the request shall be made to the source owner or operator allowing at least sixty (60) days to schedule the demonstration.

[As added at: 21 IR 2077.]

326 IAC 3-7-4 ----- Fuel sampling and analysis procedures: fuel oil sampling; analysis methods

(a) Sampling and analysis of the sulfur content of fuel oil shall be performed in accordance with the following ASTM procedures:

- (1) Collection of fuel oil samples shall be conducted according to either of the following:
 - (A) ASTM D4057-88*, "Standard Practice for Manual Sampling of Petroleum and Petroleum Products".
 - (B) ASTM D4177-82*, "Standard Method for Automatic Sampling of Petroleum and Petroleum Products".
- (2) Determination of sulfur content shall be conducted according to any of the following:
 - (A) ASTM D129-95*, "Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)".
 - (B) ASTM D1266-91*, "Standard Test Method for Sulfur in Petroleum Products (Lamp Method)".
 - (C) ASTM D1552-95*, "Standard Test Method for Sulfur in Petroleum Products (High-Temperature Method)".
 - (D) ASTM D2622-94*, "Standard Test Method for Sulfur in Petroleum Products (X-Ray Spectrographic Method)".
- (3) Determination of heat content shall be conducted according to ASTM D240-92*, "Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter".

(b) An owner or operator may, with the prior approval of the department, modify the procedures specified in subsection (a), use alternate equivalent procedures, or rely upon equivalent sampling and analysis procedures performed by the vendor prior to delivery of the fuel oil to the owner or operator.

*Copies of the American Society for Testing and Materials (ASTM) procedures referenced may be obtained from ASTM, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, (610) 832-9585 and are available for copying at the Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Indianapolis, Indiana 46206-6015.

[As added at: 21 IR 2077.]

326 IAC 3-7-5 ----- Fuel sampling and analysis procedures: record keeping requirements; standard operating procedures

(a) Owners or operators of sources with total coal-fired capacity greater than or equal to one hundred (100) million British thermal units per hour actual heat input shall develop a standard operating procedure (SOP) to be followed for sampling, handling, analysis, quality control, quality assurance, and data reporting of the information collected pursuant to sections 2 through 4 of this rule. In addition, any revision to the SOP shall be submitted to the department.

(b) The owner or operator shall maintain records sufficient to verify compliance with the procedures specified in sections 2 through 4 of this rule. Records shall be maintained for a period of five (5) years and shall be made available upon request by the department. The department may at any time perform a systems audit to determine compliance with the requirements in sections 2 through 4 of this rule. Audit procedures shall be submitted to the owner or operator of a fuel sampling and analysis system subject to audit prior to conducting such audit.

[As added at: 21 IR 2078.]

